

10/657, 157

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AND CURRENT DISCOVER FILE IS DATED 26 APRIL 2004

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SESSION 0.21
FULL ESTIMATED COST

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FILE COVERS 1907 - 28 Jul 2004 VOL 141 ISS 5
FILE LAST UPDATED: 27 Jul 2004 (20040727/ED)

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=> s (meth)acrylic esters or meth-acrylic ester or meth acrylic ester or(meth)acrylic acid or meth-acrylic acid meth acrylic acid
MISSING OPERATOR (METH)ACRYLIC
The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s (meth)acrylic esters or meth-acrylic ester or meth acrylic ester or(meth)acrylic acid or meth-acrylic acid or meth acrylic acid
MISSING OPERATOR (METH)ACRYLIC
The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s meth acrylic ester
33548 METH
3 METHS
33550 METH
(METH OR METHS)
233395 ACRYLIC
1256 ACRYLICS
233754 ACRYLIC
(ACRYLIC OR ACRYLICS)
547111 ESTER
408573 ESTERS
763869 ESTER
(ESTER OR ESTERS)
L1 517 METH ACRYLIC ESTER
(METH(W)ACRYLIC(W)ESTER)

=> s meth acrylic acid
33548 METH
3 METHS
33550 METH
(METH OR METHS)
233395 ACRYLIC
1256 ACRYLICS
233754 ACRYLIC
(ACRYLIC OR ACRYLICS)
3846720 ACID
1439656 ACIDS
4315045 ACID
(ACID OR ACIDS)

10/657,157

L2 6529 METH ACRYLIC ACID
(METH(W) ACRYLIC(W) ACID)

=> s meth-acrylic acid
33548 METH
3 METHS
33550 METH
(METH OR METHS)
233395 ACRYLIC
1256 ACRYLICS
233754 ACRYLIC
(ACRYLIC OR ACRYLICS)
3846720 ACID
1439656 ACIDS
4315045 ACID
(ACID OR ACIDS)

L3 6529 METH-ACRYLIC ACID
(METH(W) ACRYLIC(W) ACID)

=> s (meth)acrylic acid
MISSING OPERATOR METH) ACRYLIC

The search profile that was entered contains terms or
nested terms that are not separated by a logical operator.

=> dup rem l1 l2
PROCESSING COMPLETED FOR L1
PROCESSING IS APPROXIMATELY 16% COMPLETE FOR L2
PROCESSING IS APPROXIMATELY 35% COMPLETE FOR L2
PROCESSING IS APPROXIMATELY 54% COMPLETE FOR L2
PROCESSING IS APPROXIMATELY 73% COMPLETE FOR L2
PROCESSING IS APPROXIMATELY 93% COMPLETE FOR L2
PROCESSING COMPLETED FOR L2
L4 6958 DUP REM L1 L2 (88 DUPLICATES REMOVED)

=> s l4 and (esterif? or transesterif?)
L5 514 S L4
L6 6444 S L4
121695 ESTERIF?
19336 TRANSESTERIF?
L7 745 (L5 OR L6) AND (ESTERIF? OR TRANSESTERIF?)

=> s l7 and alcohol
214408 ALCOHOL
147720 ALCOHOLS
335134 ALCOHOL
(ALCOHOL OR ALCOHOLS)
538090 ALC
179251 ALCS
629729 ALC
(ALC OR ALCS)
748695 ALCOHOL
(ALCOHOL OR ALC)
L8 244 L7 AND ALCOHOL

=> s l4 and (process or prepar? or make or made or synthes?)
L9 514 S L4
L10 6444 S L4
1958444 PROCESS
1299692 PROCESSES
2911574 PROCESS

(PROCESS OR PROCESSES)

1480947 PREPAR?

110746 PREP

1954 PREPS

112505 PREP

(PREP OR PREPS)

1874342 PREPD

21 PREPDS

1874357 PREPD

(PREPD OR PREPDS)

97386 PREPG

12 PREPGS

97397 PREPG

(PREPG OR PREPGS)

2490259 PREPN

195592 PREPNS

2638614 PREPN

(PREPN OR PREPNS)

4367118 PREPAR?

(PREPAR? OR PREP OR PREPD OR PREPG OR PREPN)

192678 MAKE

148039 MAKES

331508 MAKE

(MAKE OR MAKES)

1103437 MADE

24 MADES

1103457 MADE

(MADE OR MADES)

1381870 SYNTHESES?

L11 4198 (L9 OR L10) AND (PROCESS OR PREPAR? OR MAKE OR MADE OR SYNTHESES?)

=> s l11 and (esterif? or transesterif?)

121695 ESTERIF?

19336 TRANSESTERIF?

L12 594 L11 AND (ESTERIF? OR TRANSESTERIF?)

=> s l12 and alcohol

214408 ALCOHOL

147720 ALCOHOLS

335134 ALCOHOL

(ALCOHOL OR ALCOHOLS)

538090 ALC

179251 ALCS

629729 ALC

(ALC OR ALCS)

748695 ALCOHOL

(ALCOHOL OR ALC)

L13 193 L12 AND ALCOHOL

=> s l13 and inhibitor

447426 INHIBITOR

466871 INHIBITORS

720148 INHIBITOR

(INHIBITOR OR INHIBITORS)

L14 52 L13 AND INHIBITOR

=> s l13 and polymerization inhibitor

309594 POLYMERIZATION

3945 POLYMERIZATIONS

310136 POLYMERIZATION

(POLYMERIZATION OR POLYMERIZATIONS)

302253 POLYMN
 7687 POLYMNS
 303220 POLYMN
 (POLYMN OR POLYMNS)
 418088 POLYMERIZATION
 (POLYMERIZATION OR POLYMN)
 447426 INHIBITOR
 466871 INHIBITORS
 720148 INHIBITOR
 (INHIBITOR OR INHIBITORS)
 7284 POLYMERIZATION INHIBITOR
 (POLYMERIZATION (W) INHIBITOR)

L15 50 L13 AND POLYMERIZATION INHIBITOR

=> d dup rem 114 115

L15 IS NOT VALID HERE

For an explanation, enter "HELP DISPLAY".

=> dup rem 114 115

PROCESSING COMPLETED FOR L14

PROCESSING COMPLETED FOR L15

L16 52 DUP REM L14 L15 (50 DUPLICATES REMOVED)

=> d 116 ibib hitstr abs 1-52

L16 ANSWER 1 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2004:139077 CAPLUS

DOCUMENT NUMBER: 140:181967

TITLE: **Process for manufacturing (meth)
acrylic esters**

INVENTOR(S): Hayashi, Katsunori; Kobayashi, Akihiro; Arashima,
Katsuyasu

PATENT ASSIGNEE(S): Hitachi Chemical Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004051546	A2	20040219	JP 2002-211205	20020719

PRIORITY APPLN. INFO.: JP 2002-211205 20020719

AB In the **process** for manufacturing acrylic ester or methacrylic ester by reacting an **alc.** with acrylic acid or methacrylic acid in a solvent in the presence of an acid catalyst, the reaction mixture is neutralized (upon completion of the **esterification**), washed with water, and a basic lithium salt (at 0.01 to 5 weight% relative to the ester produced) is added to the neutralized liquid, the reaction solvent is distilled off while mol. oxygen is introduced, and the insol. matter is removed by filtration. Thus, tris(2-hydroxyethyl) isocyanurate acrylate (I), showing APHA 40 and good solubility in MeOH and toluene, was **prepared** in 95% yield, vs. I (**prepared** by a reference **process**) showing APHA 40 with good solubility in methanol and low solubility in toluene.

L16 ANSWER 2 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2004:159023 CAPLUS

DOCUMENT NUMBER: 140:199903

TITLE: **Esterification process and catalysts for the production of (meth)acrylate esters from (meth)acrylic acid and alcohols**
 INVENTOR(S): Beste, York Alexander; Stein, Bernd
 PATENT ASSIGNEE(S): BASF A.-G., Germany
 SOURCE: Ger. Offen., 11 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10317435	A1	20040226	DE 2003-10317435	20030415

PRIORITY APPLN. INFO.: DE 2003-10317435 20030415
 AB (meth)acrylate esters (e.g., Bu acrylate) are prepared by the heterogeneous-catalyzed (e.g., Amberlyst 15) conversion of (meth)acrylic acids with at least one alc. in at least one reactor, in which: (A) the water content in the bottom of the azeotropic distillation column is >0.15 ppm; and/or (B) the content of the (meth)acrylic acid in the sump of the azeotrope column is ≤60%; and/or (C) the heterogeneous catalyst before the reaction is contacted with a polymerization inhibitor-containing alc. solution (e.g., 1-butanol and phenothiazine).

L16 ANSWER 3 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 3
 ACCESSION NUMBER: 2003:610404 CAPLUS
 DOCUMENT NUMBER: 139:149334
 TITLE: **Process for preparation of (meth)acrylic acid esters**
 INVENTOR(S): Yada, Shuhei; Goriki, Masayasu; Nakamura, Mitsuo
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corporation, Japan
 SOURCE: PCT Int. Appl., 11 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003064370	A1	20030807	WO 2003-JP594	20030123
W: AE, AG, AL, AU, BA, BB, BR, BZ, CA, CN, CO, CR, CU, DM, DZ, EC, GD, GE, HR, HU, ID, IL, IN, IS, KP, KR, LC, LK, LR, LT, LV, MA, MG, MK, MN, MX, NO, NZ, OM, PH, PL, RO, SC, SG, TN, TT, UA, US, UZ, VC, VN, YU, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2003292472	A2	20031015	JP 2003-13454	20030122

PRIORITY APPLN. INFO.: JP 2002-21374 A 20020130
 AB This invention pertains to a method for producing (meth)acrylic acid esters which comprises feeding (meth)acrylic acid and an alc. to a reactor, wherein a polymerization inhibitor is dissolved in the reaction mixture (Meth)acrylic acid and (meth)acrylic acid esters are prevented from

polymerizing on the member present in the gas-phase part of the reactor, and a continuous operation can be conducted over long. For example, acrylic acid was reacted with BuOH in the presence of p-toluenesulfonic acid and hydroquinone to give Bu acrylate.

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 4 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 4
 ACCESSION NUMBER: 2003:396830 CAPLUS
 DOCUMENT NUMBER: 138:385915
 TITLE: Method for producing (meth)acrylic acid esters of polyhydric alcohols
 INVENTOR(S): Martin, Friedrich-Georg; Wartini, Alexander; Dernbach, Matthias; Schroeder, Juergen; Sirch, Tilman
 PATENT ASSIGNEE(S): BASF Aktiengesellschaft, Germany
 SOURCE: PCT Int. Appl., 41 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 6
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003042151	A1	20030522	WO 2002-EP12491	20021108
WO 2003042151	C1	20040624		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
DE 10156116	A1	20030626	DE 2001-10156116	20011115

PRIORITY APPLN. INFO.: DE 2001-10156116 A 20011115

OTHER SOURCE(S): MARPAT 138:385915

AB (Meth)acrylic acid esters of polyhydric alcs. are manufactured by reacting (meth)acrylic acid and the corresponding polyhydric alcs. in the presence of ≥ 1 acid catalyst and, optionally, ≥ 1 polymerization inhibitor and a solvent, whereby the polyhydric alc. contains < 500 ppm HCHO. Thus, trimethylolpropane containing 282 ppm acetal-bound HCHO was esterified with acrylic acid in cyclohexane mixture containing p-MeOC₆H₄OH, H₃PO₂, CuCl₂ and H₂SO₄ to give product having d. 1.1041 g/cm³ and dynamic viscosity 85 mPa·s (23°), vs. d. 1.1153 g/cm³ and dynamic viscosity 246 mPa·s for similar product prepared by use of trimethylolpropane containing 1400 ppm of acetal-bound HCHO.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 5 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 5
 ACCESSION NUMBER: 2003:166982 CAPLUS
 DOCUMENT NUMBER: 138:188258
 TITLE: Preparation of 2-phenylethyl (meth)acrylate
 INVENTOR(S): Doi, Junichi; Sonobe, Hiroshi; Matsumoto, Satoshi

PATENT ASSIGNEE(S): Mitsubishi Rayon Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003064024	A2	20030305	JP 2001-254623	20010824
			JP 2001-254623	20010824

PRIORITY APPLN. INFO.:
 AB The compound is **prepared** by **esterification** of (meth)acrylic acid with 2-phenylethyl **alc.** in the presence of 0.05-0.5 mol equivalent (based on 1 mol **alc.**) of acid catalysts. Methacrylic acid was **esterified** with 2-phenylethyl **alc.** in the presence of p-MeC₆H₄SO₃H, N,N'-di-2-naphthyl-p-phenylenediamine, and p-methoxyphenol at 72-83° for 10 h, washed with alkalies, and distilled to give 95% 2-phenylethyl methacrylate with 99.7% purity.

L16 ANSWER 6 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN
 ACCESSION NUMBER: 2003:35382 CAPLUS
 DOCUMENT NUMBER: 138:73685
 TITLE: **Process for preparing alkyl (meth)acrylates**
 INVENTOR(S): Venter, Jeremia Jesaja; Mirabelli, Mario Giuseppe Luciano
 PATENT ASSIGNEE(S): Rohm and Haas Company, USA
 SOURCE: U.S., 7 pp., Cont.-in-part of U.S. Ser. No. 192,675, abandoned.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6506930	B1	20030114	US 1999-417400	19991013
			US 1997-66939P	P 19971117
			US 1998-192675	B2 19981116

PRIORITY APPLN. INFO.:
 AB The **process** provides for the **synthesis** of alkyl (meth)acrylates, hydrolysis of **process** impurities into starting materials and separation of starting materials and reaction products in one reactor. A typical **process** comprises: (A) charging a reactor with a C1-4 **alc.**; a (meth)acrylic acid; a strong acid catalyst selected from the group consisting of sulfuric acid, alkylsulfonic acid and polymer supported alkylsulfonic acid; at least one **inhibitor** selected from the group consisting of 2,2,6,6-tetramethyl-1-piperidinyloxy, 4-hydroxy-2,2,6,6-tetramethyl-1-piperidinyloxy, 4-methacryloyloxy-2,2,6,6-tetramethyl piperidinyl free radical and 4-hydroxy-2,2,6,6-tetramethyl N-hydroxypiperidine; and at least 5% water to form a reaction mixture; (B) reacting the reaction mixture to form a C1-4 alkyl (meth)acrylate and **process** impurities, wherein the **process** impurities are hydrolyzed in said reactor; and (C) separating the C1-4 alkyl (meth)acrylate and water formed during the reaction from the reaction mixture

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 7 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 6

ACCESSION NUMBER: 2002:845303 CAPLUS

DOCUMENT NUMBER: 137:338384

TITLE: **Esterification process for the**
production of (meth)acrylate esters

INVENTOR(S): Nestler, Gerhard; Geisendoerfer, Matthias

PATENT ASSIGNEE(S): BASF AG, Germany

SOURCE: Ger. Offen., 12 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10154714	A1	20021107	DE 2001-10154714	20011109
DE 10246869	A1	20030327	DE 2002-10246869	20021008

PRIORITY APPLN. INFO.:

AB The production of (meth)acrylate esters (e.g., 2-ethylhexyl acrylate) by is achieved by acid-catalyzed **esterification** of (meth)acrylic acids (e.g., acrylic acid) with the appropriate alc. (e.g., 2-ethylhexanol) in a homogeneous liquid phase in the presence of a polymerization **inhibitor** (e.g., phenothiazine) and/or an **inhibitor** mixture, one accomplishes the **esterification** (stage 1) in a reaction zone, which is equipped with at least one distillation unit, over which one separates the reaction water as well as olefins, alc., acetic acid esters and propionic acid ester, formed with the **esterification**, condensed and in an aqueous and an organic phase are separated, the discharge from the reaction zone from stage 1 is lead into a catalyst separation stage (stage 2) and into a **esterification** -catalyzed bottoms product and the (meth)acrylate esters head product is separated, from this (meth)acrylate ester-containing head product in a following stage the remaining (meth)acrylate ester-containing stream/current is separated into a light-boiling fraction (stage 4) and the (meth)acrylate ester essentially freed of acetic acid ester and output alc. recycled, from the released acetic acid ester and output alc. the (meth)acrylate ester made from stage 4 in a pure distillation (stage 6) separates from the high-boiling solvents and the high-boiling solvent-containing stream is subjected to a thermal and/or catalytic treatment.

L16 ANSWER 8 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 7

ACCESSION NUMBER: 2002:403632 CAPLUS

DOCUMENT NUMBER: 136:402195

TITLE: **Transesterification process for**
the production of higher alkyl (meth)acrylate esters

INVENTOR(S): Nestler, Gerhard; Rauh, Ulrich; Schroeder, Juergen

PATENT ASSIGNEE(S): BASF AG, Germany

SOURCE: Ger. Offen., 12 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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DE 10127941	A1	20020529	DE 2001-10127941	20010608
WO 2002100815	A1	20021219	WO 2002-EP5821	20020528
W: CN, JP, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,				
PT, SE, TR				
EP 1399409	A1	20040324	EP 2002-747325	20020528
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, FI, CY, TR				
PRIORITY APPLN. INFO.:			DE 2001-10127941 A	20010608
			WO 2002-EP5821	W 20020528

OTHER SOURCE(S): MARPAT 136:402195

AB (meth)acrylate esters [e.g., 2-(dimethylamino)ethyl acrylate] are prepared in high yield and selectivity by the transesterification of lower-alkyl (meth)acrylate esters (e.g., Bu acrylate) with a higher alc. [e.g., 2-(dimethylamino)ethanol] in the presence of a polymerization inhibitor (e.g., phenothiazine and hydroquinone monomethyl ether) and a transesterification catalyst (e.g., tetra-Bu titanate) or a catalyst mixture, and where one separates the free byproduct lower alkanol (e.g., 1-butanol) and at least partly supplies the production of the lower-alkyl (meth)acrylate by acidification of the process waste water and esterification of the residual (meth)acrylic acid (e.g., acrylic acid) with the byproduct alkanol.

L16 ANSWER 9 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 2002:462390 CAPLUS

DOCUMENT NUMBER: 137:33676

TITLE: Procedure for manufacture of (meth)acrylic acid esters

INVENTOR(S): Martin, Friedrich-Georg; Nestler, Gerhard; Schroeder, Juergen

PATENT ASSIGNEE(S): BASF AG, Germany

SOURCE: Ger. Offen., 4 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10063176	A1	20020620	DE 2000-10063176	20001218
WO 2002050015	A1	20020627	WO 2001-EP14903	20011217
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,				
PT, SE, TR				
EP 1345887	A1	20030924	EP 2001-984858	20011217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
IE, FI, CY, TR				
US 2004030179	A1	20040212	US 2003-433614	20030617
PRIORITY APPLN. INFO.:			DE 2000-10063176 A	20001218
			WO 2001-EP14903 W	20011217

AB (meth)acrylic acid esters (of mol. weight >200) are obtained by esterification of (meth)acrylic acid with alcs. in the presence of ≥ 1 acid catalyst, ≥ 1 polymerization inhibitor, and an organic solvent, which forms an azeotrope with water, whereby the the mixture is heated to the b.p. in an apparatus with a distillation unit, column and condenser,

the azeotrope is distilled off and the organic solvent is recirculated to the column at least partially contacting a copper-containing material, such as distillation column packings or separation efficient fittings. Thus, acrylic acid

2380, tripropylene glycol 2880, cyclohexane 2300, p-toluenesulfonic acid 120, 50% phosphinic acid 9.4, and hydroquinone monomethylether 4.7 parts were mixed in a 10-L-reactor with a double layer heating and distillation column

(5 + 60 cm). The reaction water formed was distilled off as azeotrope with cyclohexane, whereby after condensation the organic phase formed was separated and recirculated to the column, which was filled with copper Raschig-rings at the top and glass rings under it. Within 8 h, 546 parts of water was separated, so that a 97% yield of **esterification** took place and no polymerization was observed in the column.

L16 ANSWER 10 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 9
 ACCESSION NUMBER: 2002:462389 CAPLUS
 DOCUMENT NUMBER: 137:47591
 TITLE: Procedure for manufacture of higher (**meth**)
 acrylic acid esters
 INVENTOR(S): Martin, Friedrich-Georg; Nestler, Gerhard; Schroeder,
 Juergen
 PATENT ASSIGNEE(S): BASF AG, Germany
 SOURCE: Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 6
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10063175	A1	20020620	DE 2000-10063175	20001218
WO 2002055472	A1	20020718	WO 2001-EP14636	20011213
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1345886	A1	20030924	EP 2001-984833	20011213
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
WO 2002050014	A1	20020627	WO 2001-EP14902	20011217
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1343748	A1	20030917	EP 2001-994797	20011217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2004019235	A1	20040129	US 2003-433612	20030617
US 2004024241	A1	20040205	US 2003-450438	20030618
PRIORITY APPLN. INFO.:			DE 2000-10063175 A	20001218
			DE 2001-10152680 A	20011019
			WO 2001-EP14636 W	20011213
			WO 2001-EP14902 W	20011217

AB Higher (**meth**) acrylic acid esters (of mol. weight >200) are obtained by **esterification** of (**meth**) acrylic acid with higher **alcs.** in the presence of ≥ 1 acid catalyst, ≥ 1 polymerization **inhibitor**, and an organic solvent, which forms an azeotrope with water, whereby the the mixture is heated to the b.p. in an apparatus with a distillation unit, column and condenser

and the reactor content is circulated via an external evaporator, preferably an self-circulating evaporator. Thus, (meth) acrylic acid 172, methoxyphenol 9.2, phenothiazine 0.3, 50% phosphinic acid 23.8, 65% p-toluenesulfonic acid 497, and cyclohexane 1030 g were mixed in a 10-L-reactor with an external evaporator, distillation column, and condenser. A circulation evaporator (a heat exchanger comprising a nest of boiler tubes filled with oil) was used. After evaporating the water from the reaction mixture, 344 g (meth)acrylic acid and 6000 g Me polyethylene glycol were added to give after 330 min 207 g aqueous phase and 6890 g crude ester. The procedure permits the preparation of higher (meth)acrylic acid esters without use of copper salts as polymerization inhibitors.

L16 ANSWER 11 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 10

ACCESSION NUMBER: 2001:481835 CAPLUS
 DOCUMENT NUMBER: 135:61734
 TITLE: Manufacture of (meth)acrylate esters with recycling polymerization inhibitor-containing residues
 INVENTOR(S): Nakahara, Osamu; Kamioka, Masatoshi
 PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001181233	A2	20010703	JP 2000-311413	20001012
US 6649787	B1	20031118	US 2000-684396	20001010

PRIORITY APPLN. INFO.: JP 1999-289345 A 19991012

AB (meth)acrylate esters are manufactured by esterification of (meth)acrylic acid with C1-4 aliphatic alcs. in the presence of acid catalysts and distillation of the reaction mixts. using an acid separation column., a low boiling substance-separation column, and a rectifying column with returning from the rectifying column to the esterification and/or the separation/purification process. Thus, (a) acrylic acid containing phenothiazine (I), (b) BuOH, and (c) I-containing high boiling residue collected from the rectifying column were passed through a cation exchanger-packed reactor and the reaction mixture was distilled with using fresh I as a polymerization inhibitor in the acid separation and rectifying processes. Hydroquinone monomethyl ether was also used as a polymerization inhibitor in another rectifying column. and Bu acrylate was collected. The polymerization inhibitors were recovered and reused in distillation of the acrylate ester.

L16 ANSWER 12 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 11

ACCESSION NUMBER: 2001:150618 CAPLUS
 DOCUMENT NUMBER: 134:193858
 TITLE: Esterification process for the production of (meth)acrylate esters with the azeotropic distillation of process water
 INVENTOR(S): Leube, Hartmann F.; Leidinger, Kurt; Geisendoerfer, Matthias; Beck, Erich
 PATENT ASSIGNEE(S): BASF A.-G., Germany
 SOURCE: Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19941136	A1	20010301	DE 1999-19941136	19990830
EP 1081125	A1	20010307	EP 2000-117813	20000818
EP 1081125	B1	20030611		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
AT 242759	E	20030615	AT 2000-117813	20000818
ES 2200763	T3	20040316	ES 2000-117813	20000818
US 6437172	B1	20020820	US 2000-644824	20000824

PRIORITY APPLN. INFO.:

AB (meth)acrylate esters (e.g., the methacrylate ester of propoxylated trimethylolpropane) are prepared in high yield and selectivity by the esterification of a high-boiling mono- or polyhydric alc. (e.g., propoxylated trimethylolpropane) with (meth) acrylic acid in the presence of an esterification catalyst (e.g., p-toluenesulfonic acid), a polymerization inhibitor (e.g., hydroquinone monomethyl ether), and an azeotropic distillation agent, such as (cyclo)aliphatic hydrocarbons (e.g., cyclohexane),

for

the removal of process water, which azeotropic distillation agent is dosed into the reaction mixture during the esterification reaction for both the removal of process water and so as to control the boiling temperature of the reaction.

L16 ANSWER 13 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 12

ACCESSION NUMBER: 2001:114630 CAPLUS

DOCUMENT NUMBER: 134:163471

TITLE: Production of esters of (meth) acrylic acid and polyhydric alcohols and device therefor

INVENTOR(S): Roessler, Harald; Fies, Matthias; Gutsche, Bernhard; Stalberg, Theo

PATENT ASSIGNEE(S): Cognis Deutschland G.m.b.H., Germany

SOURCE: Ger. Offen., 6 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19937911	A1	20010215	DE 1999-19937911	19990811
WO 2001012315	A1	20010222	WO 2000-EP7496	20000803
	W: KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE			
EP 1204472	A1	20020515	EP 2000-958367	20000803
EP 1204472	B1	20030129		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY			
ES 2191637	T3	20030916	ES 2000-958367	20000803
PRIORITY APPLN. INFO.:			DE 1999-19937911 A	19990811
			WO 2000-EP7496	W 20000803

AB Esters based on (meth)acrylic acid and

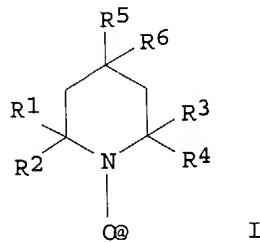
polyhydric alcs. are produced in a reactor whereby the liquid reaction mixture contains polymerization **inhibitors** and whereby one at least partly separates the produced water of reaction in the vapor state, which is characterized by the fact that a part of the gas/vapor phase of the reaction mixture is removed from the reactor, then partially condensed in a dephlegmator and then fed to an ascending gas/steam mixture as well as the condensate coming from the head of the dephlegmator, with a polymerization **inhibitor** being added, and with provisions being made for recycling to the reactor. The **process** permits the use of a smaller excess of unsatd. acid, decreases the chance of polymerization, shortens the reaction time, and decreases the organic wastewater content.

L16 ANSWER 14 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 13
 ACCESSION NUMBER: 2000:600284 CAPLUS
 DOCUMENT NUMBER: 133:193609
 TITLE: Radical polymerization **inhibitors** containing phenothiazine adducts and manufacture of (meth)acrylate esters using them
 INVENTOR(S): Sato, Hiroyuki; Fukumura, Takanori; Ohizumi, Fumitaka
 PATENT ASSIGNEE(S): Chisso Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000234002	A2	20000829	JP 1999-36716	19990216
PRIORITY APPLN. INFO.:			JP 1999-36716	19990216
AB	The inhibitors comprise adducts of phenothiazine with S-containing acidic compds. and are used for preparation of (meth)acrylate esters from (meth)acrylic acid or (meth)acryloyl chloride and hydroxy compds. Thus, a reaction of methacrylic acid with 1-(2-hydroxyethyl)-2-pyrrolidone at 130° for 4 h in the presence of H ₂ SO ₄ and phenothiazine gave 2-(2-pyrrolidonyl)ethyl methacrylate.			

L16 ANSWER 15 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 14
 ACCESSION NUMBER: 2000:412204 CAPLUS
 DOCUMENT NUMBER: 133:43958
 TITLE: Preparation of high-purity (meth) acrylic acid esters
 INVENTOR(S): Yoshida, Koichi; Tokuda, Masanori; Sonobe, Hiroshi; Ohkita, Motomu
 PATENT ASSIGNEE(S): Mitsubishi Rayon Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000169429	A2	20000620	JP 1998-351392	19981210
PRIORITY APPLN. INFO.:			JP 1998-351392	19981210
OTHER SOURCE(S):	MARPAT 133:43958			
GI				



AB The title compds. are **prepared by transesterification of** Me (meth)acrylate with C3-20 alcs. or phenols in the presence of supported transition metal compound catalysts and I [R1-R4 = alkyl; R5 = H, OH, OR, OCOR, NHCOR, O[(C2H4O)n + (C3H6O)m]H; R6 = H, or R5R6 = :O; R = (un)substituted C1-18 alkyl, alkenyl, aryl; m, n = 0-10, and m = n ≠ 0]. Thus, stirring MMA with allyl alc. in the presence of silica/alumina-supported Ti catalysts and I (R1-R4 = Me; R5 = OH; R6 = H) gave allyl methacrylate with 99.5% purity.

L16 ANSWER 16 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 15

ACCESSION NUMBER: 2000:374769 CAPLUS

DOCUMENT NUMBER: 133:8284

TITLE: Polyoxoalkylene (meth)acrylic acid esters and their polymers, their manufacture, and use of the polymers as cement dispersants

INVENTOR(S): Hirata, Takeshi; Yuasa, Tsutomu

PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000154247	A2	20000606	JP 1998-328686	19981118
PRIORITY APPLN. INFO.:			JP 1998-328686	19981118

AB CH₂:CR₃CO₂(R₂₀)_nR₁ (I; R₁ = C₁-30 hydrocarbon; R₂₀ = C₂-18 oxyalkylene; R₂₀ may be block or random copolymers; R₃ = H, Me; n = average oxyalkylene groups = 0-300) containing ≤2.0 area% (in liquid chromatog.) polymerized products is claimed. I is manufactured by **esterification** reaction of R₁(R₂₀)_nH and (meth)acrylic acid in presence of a polymerization **inhibitor** in a dehydration solvent, and addition of ≤1000 ppm (based on the total amount of raw material alc. and acid) water-soluble polymerization **inhibitor** during removal of the dehydration solvent from the reaction solution, after finishing the **esterification**. Polymers containing I, their manufacture, and their use in cement dispersants are also claimed. Cement compns. containing the polymers showed high slump maintaining properties.

L16 ANSWER 17 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 16

ACCESSION NUMBER: 2000:277696 CAPLUS

DOCUMENT NUMBER: 132:279644

TITLE: Process for the preparation and

extraction of (meth)acrylate esters of mono- and polyhydric **alcohols** using dense-phase carbon dioxide

INVENTOR(S): Tweedy, Harrel E.
 PATENT ASSIGNEE(S): UCB, S.A., Belg.
 SOURCE: Eur. Pat. Appl., 18 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 995738	A1	20000426	EP 1999-120221	19991011
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000128829	A2	20000509	JP 1999-296617	19991019
US 1998-174412 A 19981019				

PRIORITY APPLN. INFO.:
 AB The present invention relates to a **process for preparing** acrylate esters, methacrylate esters, polyester acrylates (e.g., trimethylolpropane triacrylate) and/or polyester methacrylates by reacting acrylic and/or methacrylic acid with a monohydroxy compound and/or a polyhydroxy compound (e.g., trimethylolpropane) in a reaction vessel, in the presence of a catalyst (e.g., Amberlyst A15), a polymerization **inhibitor** (e.g., phenothiazine), and dense-phase carbon dioxide. The dense phase carbon dioxide is in either a sub-critical, near-critical, critical, or supercrit.

phys. state. The advantages of using dense-phase carbon dioxide as the solvent include the **preparation** of (meth)acrylate esters and polyester (meth)acrylates in an environmentally friendly manner by reducing or eliminating the need for hydrocarbon solvents, reducing or eliminating the problems associated with handling hydrocarbon solvents, simplifying recovery of the products, and recovery and recycle of reactants as compared to the conventional **esterification synthesis**. In addition, these products have improved color and purity.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 18 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 17

ACCESSION NUMBER: 2000:240714 CAPLUS

DOCUMENT NUMBER: 132:279640

TITLE: **Preparation of (meth)acrylate esters and polyester (meth)acrylates in the presence of a catalyst and inhibitor under microwave heating**

INVENTOR(S): Tweedy, Harrel E.

PATENT ASSIGNEE(S): UCB, S.A., Belg.

SOURCE: Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent
 LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
80	A1	20000412	EP 1999-119616	19991004
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

IE, SI, LT, LV, FI, RO
 US 6175037 B1 20010116 US 1998-168991 19981009
 JP 2000119216 A2 20000425 JP 1999-289458 19991012

PRIORITY APPLN. INFO.: US 1998-168991 A 19981009

AB Acrylic or methacrylic acid is reacted with a monohydroxy- or polyhydroxy-containing compound in the presence of a catalyst and polymerization

inhibitor using microwave energy as the heating source, which can be applied to the reaction vessel continuously or intermittently by pulsing. Preferably the monohydroxy-containing compds. are C1-18 linear or branched aliphatic, cycloaliph. and aromatic compds., such as methanol and cyclohexano; and the polyhydroxy-containing compds. are C2-36 polyols having .apprx.2-10 hydroxy groups, such as cyclohexandiol, butanediol and tripropylene glycol. Advantages of using microwave energy include higher temps. coupled with shorter residence times, reduced production costs, increased capacity, lower energy costs, effective use of raw materials, and solventless processing which is environmentally friendly. Thus, a mixture of 7.3 g methacrylic acid, 5.0 g 1,6-hexanediol, 0.1 g phenothiazine, and 0.6 g methanesulfonic acid (70% aqueous solution) was polymerized

in a microwave oven at 20% power (.apprx.200 W) for 30 s followed by 20 s shaking for 2 cycles, and 18 cycles of 20-s heating/20-s agitation. After a total of 7 min cumulative microwave exposure the sample contained (GC, area % values) 74.2% 1,6-hexanediol dimethacrylate, 22.2% 1,6-hexanediol monomethacrylate, and 1.3% 1,6-hexanediol along with some other minor peaks.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 19 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 18

ACCESSION NUMBER: 2000:209660 CAPLUS
 DOCUMENT NUMBER: 132:237568
 TITLE: Method for production of polyoxyalkylene acrylates
 INVENTOR(S): Hirata, Tsuyoshi; Yuasa, Tsutomu
 PATENT ASSIGNEE(S): Nippon Shokubai Co., Ltd., Japan; Nippon Catalytic Chem. Ind.
 SOURCE: Eur. Pat. Appl., 36 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 989108	A2	20000329	EP 1999-118597	19990921
EP 989108	A3	20010124		
EP 989108	B1	20031126		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6265495	B1	20010724	US 1999-399491	19990920
KR 2000023420	A	20000425	KR 1999-41117	19990922
JP 2000159882	A2	20000613	JP 1999-269435	19990922
JP 3094024	B2	20001003		
CN 1256265	A	20000614	CN 1999-125143	19990922
CN 1134406	B	20040114		
JP 2000212128	A2	20000802	JP 1999-311664	19991101
JP 3390382	B2	20030324		
JP 1998-268122 A 19980922				
JP 1998-328687 A 19981118				

AB A method for the production of an **esterified** product is provided which affords an **esterified** product with high quality by repressing, during the **esterification** reaction of an **alc** . with **(meth)acrylic acid**, the occurrence of impurities, particularly gel, to be formed owing to the polymerization of the **alc.** and the **(meth)acrylic acid** as raw materials, the **esterified** product consequently formed, or the mixture thereof. Specifically, a method for the production of an **esterified** product of this invention comprises **esterifying** an **alc.** represented by the following formula (1): $R1O(R2O)_nH$ wherein $R1$ represents a hydrocarbon group of 1 to 30 carbon atoms, $R2O$ represents an oxyalkylene group of 2 to 18 carbon atoms, providing that the repeating units, $R2O$, may be the same or different and that when the $R2O$'s are in the form of a mixture of two or more species, the repeating units, $R2O$, may be added either in a block form or in a random form, and n represents an average addition mol number of oxyalkylene groups and is in the range of 0 to 300, with **(meth)acrylic acid** in a dehydrating solvent in the presence of an acid catalyst and a polymerization **inhibitor**, wherein a reaction temperature during the **esterification** reaction is not higher than 130°C and a circulation speed of the solvent during the **esterification** reaction is not less than 0.5 cycle/h.

L16 ANSWER 20 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 19

ACCESSION NUMBER:

2000:909652 CAPLUS

DOCUMENT NUMBER:

134:72023

TITLE:

**Process for the manufacture of (meth)
acrylic acid esters**

INVENTOR(S):

Paulus, Wolfgang; Reich, Wolfgang; Beck, Erich;
Jaworek, Thomas; Koeniger, Rainer

PATENT ASSIGNEE(S):

Basf A.-G., Germany

SOURCE:

Ger. Offen., 6 pp.

CODEN: GWXXBX

DOCUMENT TYPE:

Patent

LANGUAGE:

German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19929258	A1	20001228	DE 1999-19929258	19990625
US 6458991	B1	20021001	US 2000-592736	20000613
JP 2001026569	A2	20010130	JP 2000-187845	20000622
EP 1063225	A2	20001227	EP 2000-113365	20000623
EP 1063225	A3	20020717		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

PRIORITY APPLN. INFO.: DE 1999-19929258 A 19990625

AB Compds. with **alc.** OH groups are **esterified**, in the presence of Cu(II) salts or their mixts. with Cu(I) salts as polymerization **inhibitors**, with acrylic or methacrylic acid in the presence of a hydrocarbon (b.p. 60-140°) for azeotropic removal of water at 90-150°. After **esterification** the Cu salt is precipitated as CuS and the ester is separated. The resulting light-colored esters, obtained in high yields, are particularly suitable for colored pigmented coatings on substrates such as wood, paper, mineral building materials, plastic or metal.

L16 ANSWER 21 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1999:34537 CAPLUS
 DOCUMENT NUMBER: 130:95963
 TITLE: Zirconium catalyzed transesterification process for preparing synthetic wax monomers
 INVENTOR(S): Schlaefer, Francis William; Gross, Andrew William
 PATENT ASSIGNEE(S): Rohm and Haas Company, USA
 SOURCE: U.S., 5 pp.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5856611	A	19990105	US 1997-950443	19971015
PRIORITY APPLN. INFO.:			US 1997-950443	19971015

AB A zirconium catalyzed transesterification process for preparing synthetic wax monomers comprises reacting a synthetic wax alc. with a (meth)acrylic acid ester in the presence of a zirconium catalyst and an inhibitor. The monomers are useful in a wide range of polymers.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L16 ANSWER 22 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 20

ACCESSION NUMBER: 1998:421476 CAPLUS
 DOCUMENT NUMBER: 129:82071
 TITLE: Manufacture of tetrahydrobenzyl (meth)acrylate by using polymerization inhibitors and oxygen gas for reaction efficiency
 INVENTOR(S): Fujiwara, Keisuke
 PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10175919	A2	19980630	JP 1996-353733	19961218
PRIORITY APPLN. INFO.:			JP 1996-353733	19961218

OTHER SOURCE(S): MARPAT 129:82071
 AB Tetrahydrobenzyl alc. (I) is esterified with (meth)acrylic acid in the presence of O₂-containing gases and polymerization inhibitors of (1) (A) quinones, hindered phenols, nitrosoamines, and/or phenylenediamines or (B) phenothiazines, RR'NOH (R, R' = H, alkyl, aryl), Cu(S₂CNR₁₂)₂ (R₁ = alkyl, aryl), and/or Fe(S₂CNR₁₂)₃ or (2) (A') hydroquinone, hydroquinone monomethyl ether (II), benzoquinone, 3,5-di-tert-butyl-4-hydroxytoluene (III), N-nitrosodiphenylamine, and/or N,N'-diphenylphenylenediamine or (B') phenothiazine, Cu(S₂CNMe₂)₂ (IV), Cu(S₂CN₂Et₂)₂, Cu(S₂CNPr₂)₂, Fe(S₂CNMe₂)₃, and/or Et₂NOH, and the resulting crude solution is distilled with O₂-containing gases and the above polymerization inhibitors for purification. Alternatively, the esterification is carried out by using the gases and the inhibitors of A', and the resulting solution is distilled with the gases and the inhibitors of B'. Thus, a solution

of I was bubbled with air and reacted with methacrylic acid in the presence of a catalyst and polymerization **inhibitors** of II and III. Then, the product solution after catalyst removal was refluxed with IV to give tetrahydrobenzyl methacrylate with yield 84%.

L16 ANSWER 23 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 21

ACCESSION NUMBER: 1998:421475 CAPLUS
 DOCUMENT NUMBER: 129:68146
 TITLE: Production of tetrahydrobenzyl (meta)acrylate in simple condition for improved reaction efficiency
 INVENTOR(S): Fujiwara, Keisuke
 PATENT ASSIGNEE(S): Daicel Chemical Industries, Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10175918	A2	19980630	JP 1996-353732	19961218
PRIORITY APPLN. INFO.:			JP 1996-353732	19961218
OTHER SOURCE(S):	MARPAT 129:68146			
AB	Tetrahydrobenzyl alc. (I) is esterified with (meth)acrylic acid in the presence of polymerization inhibitors and catalysts in dehydration solvents of C \leq 10 hydrocarbons to carry out dehydration by azeotropic distillation. Catalysts are removed from the resulting crude solution to attain catalyst concentration \leq 10%, and then the crude solution is distilled for purification. Thus, I in n-hexane was reacted with methacrylic acid in the presence of methanesulfonic acid (catalyst) and polymerization inhibitors . The product solution was heated, stirred with water, and separated to organic and aqueous layers, so that 98.3% (based on initial catalyst content) of the catalyst was removed. Then, the resulting solution was distilled with another polymerization inhibitor to give tetrahydrobenzyl methacrylate with yield 84%.			

L16 ANSWER 24 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 22

ACCESSION NUMBER: 1998:126650 CAPLUS
 DOCUMENT NUMBER: 128:193033
 TITLE: Preparation of (meth)acrylate esters
 INVENTOR(S): Okada, Shinji; Muraue, Takao; Mishina, Hiroya
 PATENT ASSIGNEE(S): Toa Gosei Chemical Industry Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10053559	A2	19980224	JP 1996-227883	19960809
PRIORITY APPLN. INFO.:			JP 1996-227883	19960809
AB	Title esters are prepared by reacting (meth)acrylic acids and alc. in the presence of catalysts with removing H ₂ O by distillation, in which aqueous basic solns. are added			

to the distillate for adjusting pH at ≥ 6.5 . Corrosion on the reactors caused by the distillates or polymerization of the (meth) acrylic acid in the distillates are avoided in the process. Thus, acrylic acid, BuOH, H₂SO₄, hexane, and polymerization inhibitor were continuously charged at the rates of 100, 115, 1.4, 56, and 0.3 part/h, resp., at 120° into a reactor equipped with (a) a distillation column connected with a condenser and with (b) a separator from which the organic layer is recycled to a distillation column. Crude ester and

H₂O

were continuously discharged from the reactor bottom and from the separator, resp., with continuously charging 25%-NaOH into the vapor from the distillation column in order to maintain pH at 7-8 at the separator. The reaction could be continued for 100 days with no polymer formation in the separator and corrosion of the SUS-304 condenser.

L16 ANSWER 25 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 23

ACCESSION NUMBER: 1998:165487 CAPLUS

DOCUMENT NUMBER: 128:193025

TITLE: Manufacture of halogenated (meth) acrylic esters and poly (meth) acrylates

INVENTOR(S): Hofstraat, Johannes Willem; Wakselman, Claude; Lequesne, Christelle; Wiersum, Ulfert Elle; Blazejewski, Jean Claude

PATENT ASSIGNEE(S): Akzo Nobel N.V., Neth.

SOURCE: Eur. Pat. Appl., 21 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 824096	A2	19980218	EP 1997-202331	19970729
EP 824096	A3	19980408		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
CA 2212733	AA	19980213	CA 1997-2212733	19970811
JP 10095751	A2	19980414	JP 1997-230482	19970813
EP 1996-202276 19960813				

PRIORITY APPLN. INFO.:

OTHER SOURCE(S): MARPAT 128:193025

AB The present invention is directed to the preparation of (meth)acrylates of halogenated alcs. by direct esterification of the alcs. with (meth)acryloyl chloride wherein at least one 2,6-substituted pyridine derivative is used as a polymerization

inhibitor at a temperature $< 50^\circ$. Suitable 2,6-substituted pyridine derivs. are 2,6-lutidine, 2,4,6-collidine or 2,6-di-tert-butyl-4-methylpyridine. With the halogenated (meth)acrylate esters prep'd. according to the invention, very pure homo- and copolymers can be prepared, resulting in polymers having a low optical loss of ≤ 0.1 dB/cm at 1300 nm and < 0.4 dB/cm at 1550 nm. The polymers are useful in making a waveguide.

L16 ANSWER 26 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 24

ACCESSION NUMBER: 1998:808209 CAPLUS

DOCUMENT NUMBER: 130:223626

TITLE: Study on catalytic properties and polymerization retardation of heteropoly acid in the

AUTHOR(S): **preparation of acrylate**
 Ma, Liqun; Yang, Yulin
 CORPORATE SOURCE: Department of Chemical Engineering, Industry
 Institute, Qiqihar University, Qiqihar, 161006, Peop.
 Rep. China
 SOURCE: **Huagong Shikan (1998), 12(10), 16-18**
 CODEN: HUSHFT; ISSN: 1002-154X
 PUBLISHER: **Huagong Shikan Zazhishe**
 DOCUMENT TYPE: **Journal**
 LANGUAGE: **Chinese**
 AB **Ethylene glycol diacrylate, tetrahydrofurfuryl methacrylate and octadecyl methacrylate were prepared by esterification in the presence of heteropoly acid catalyst. Suitable heteropoly acid-alc. ratio was 1.0-1.5% and suitable (meth) acrylic acid-alc. was 2.2.apprx.2.4:1. The heteropoly acid showed good polymerization inhibition effect for Me methacrylate.**

L16 ANSWER 27 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 25

ACCESSION NUMBER: 1997:754319 CAPLUS
 DOCUMENT NUMBER: 128:23268
 TITLE: **Preparation of (meth) acrylic acid esters with polymerization prevention and apparatus therefor**
 INVENTOR(S): Okata, Shinji; Muraue, Takao; Mishina, Hiroya
 PATENT ASSIGNEE(S): Toa Gosei Chemical Industry Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09301921	A2	19971125	JP 1996-140966	19960510
PRIORITY APPN. INFO.:			JP 1996-140966	19960510

AB **(Meth)acrylic acids are esterified with alcs. in the presence of catalysts to give crude products, which are added with polymerization inhibitors and Michael addition products of (meth)acrylic acid esters, and remove low-b.p. impurities by distillation. The Michael addition products are added so that their concentration in resulting residue liqs. being 3-30%. Thus, heating 100 parts acrylic acid with 152 parts 2-ethylhexyl alc. at 120° in the presence of H2SO4 and phenothiazine (I) in PhMe gave a crude ester liquid, which was purified by distillation at 135-145° in the presence of I, 2-ethylhexyl β-2-ethylhexyloxypropionate, and 2-ethylhexyl β-acryloxypropionate to give 2-ethylhexyl acrylate in high yield.**

L16 ANSWER 28 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 26

ACCESSION NUMBER: 1995:737585 CAPLUS
 DOCUMENT NUMBER: 123:143297
 TITLE: **Process for the transesterification of (meth)acrylic acid esters.**
 INVENTOR(S): Knebel, Joachim; Pfirrmann, Martina; Ohl, Thomas
 PATENT ASSIGNEE(S): Rohm GmbH, Germany
 SOURCE: Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DOCUMENT TYPE:

Patent

LANGUAGE:

German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 663386	A1	19950719	EP 1995-100110	19950105
EP 663386	B1	19990414		
R: AT, BE, CH, DE, DK, ES, FR, GB, IT, LI, NL, SE				
DE 4401132	A1	19950720	DE 1994-4401132	19940117
AT 178880	E	19990415	AT 1995-100110	19950105
CA 2140304	AA	19950718	CA 1995-2140304	19950116
			DE 1994-4401132 A	19940117

PRIORITY APPLN. INFO.:

CASREACT 123:143297; MARPAT 123:143297

OTHER SOURCE(S):

AB Acrylate and methacrylate esters are **prepared** in higher yield and purity by **transesterification** of lower alkyl (meth)acrylates CH₂:C(R₁)CO₂R₂ [R₁ = H, Me; R₂ = C₁₋₆ alkyl] with mono- or polyhydric alcs. in the presence of mixed catalysts consisting of 5-95% diorganyltin oxide R₃R₄Sn:O [R₃, R₄ = C₁₋₁₂ aliphatic, aromatic, or araliph. group] and 95-5% organotin halide R₃R₄SnX₂ or R₃SnX₃ [X = Cl, Br, iodo, cyano, isocyanato, isothiocyanato]. For example, **transesterification** of triethylene glycol with excess Me methacrylate in the presence of equal amts. of Bu₂Sn:O and Bu₂SnCl₂, plus 4-HOC₆H₄OMe (polymerization **inhibitor**), under reflux with distillation of MeOH and Me methacrylate, gave triethylene glycol dimethacrylate in 87% yield, and containing only 0.8% monomethacrylate byproduct and only 1.3% Me methacrylate. In contrast, a run with only Bu₂SnCl₂ catalyst gave no reaction. Similarly **prepared** in good yields were ethylene glycol dimethacrylate, pentaerythritol tetramethacrylate and tetraacrylate, and tetrahydrofurfuryl methacrylate.

L16 ANSWER 29 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 27

ACCESSION NUMBER: 1995:207908 CAPLUS

DOCUMENT NUMBER: 122:82299

TITLE: Manufacture of (meth)acrylic acid esters

INVENTOR(S): Ri, Shotaku; Takahashi, Katsuji; Okuda, Ryuji

PATENT ASSIGNEE(S): Dainippon Ink & Chemicals, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06234700	A2	19940823	JP 1993-24124	19930212
			JP 1993-24124	19930212

PRIORITY APPLN. INFO.:

AB The compds. are manufactured by **esterification** of (meth)acrylic acid with alcs. in the presence of polymerization **inhibitors** and **esterification** catalysts, ≥ 1 of which being water-soluble; and washing the reaction mixture with H₂O to remove the water-soluble polymerization **inhibitors** and/or catalysts. Thus, heating acrylic acid with trimethylolpropane in the presence of 2-methyl-1-phenol-4-sulfonic acid, Cu sulfate, and p-MeC₆H₄SO₃H in PhMe at 65° and 130 torr for 10 h, and washing the reaction mixture with H₂O gave 99.5% acrylic esters with 100% removal of the

polymerization **inhibitors** and the catalyst.

L16 ANSWER 30 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 28
 ACCESSION NUMBER: 1995:207907 CAPLUS
 DOCUMENT NUMBER: 122:82298
 TITLE: Manufacture of (meth)acrylic
 acid esters
 INVENTOR(S): Ri, Shotaku; Takahashi, Katsuji; Okuda, Ryuji
 PATENT ASSIGNEE(S): Dainippon Ink & Chemicals, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06234699	A2	19940823	JP 1993-24125	19930212

PRIORITY APPN. INFO.: JP 1993-24125 19930212

AB The compds. are manufactured by (trans)esterification of (meth)acrylic acid esters with alcs. in the presence of water-soluble polymerization **inhibitors** and water-soluble catalysts, washing with H₂O, and recycling of the polymerization **inhibitors** and the catalysts. Thus, acrylic acid was heated with trimethylolpropane in the presence of 2-methyl-1-phenol-4-sulfonic acid, Cu sulfate, and p-MeC₆H₄SO₃H in PhMe at 65° and 130 torr for 10 h, and washed with H₂O twice to give 99.5% acrylic acid ester. The polymerization **inhibitors** and the catalyst in the 1st washing water were recycled and used for the reaction giving 99.5% acrylate.

L16 ANSWER 31 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 29

ACCESSION NUMBER: 1994:410191 CAPLUS
 DOCUMENT NUMBER: 121:10191
 TITLE: Manufacture of (meth)acrylates
 INVENTOR(S): Takahashi, Katsuji; Tani, Juichiro; Ri, Shotaku; Okuda, Tatsushi
 PATENT ASSIGNEE(S): Dainippon Ink & Chemicals, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06016594	A2	19940125	JP 1993-55628	19930316
JP 2914075	B2	19990628		

PRIORITY APPN. INFO.: JP 1992-111414 19920430

AB (Meth)acrylates are synthesized by esterification of (meth)acrylic acids with alcs. or by transesterification of (meth)acrylates with alcs. in the presence of a compound which acts as both an esterification catalyst and a polymerization **inhibitor**. Compds. which can be used for this purpose are aromatic sulfonic acids with phenolic hydroxy, amino, nitro or nitroso groups and/or partially transition metal ion-exchanged strongly acidic cation-exchange resins. For example, 201 g trimethylolpropane and 422 g acrylic acid reacted in the presence of 12.5 g hydroquinone-2-sulfonic acid in cyclohexane-toluene with 98.6% alc. conversion

and 95.6% ester yield; no polymeric species was detected.

L16 ANSWER 32 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 30
 ACCESSION NUMBER: 1994:410190 CAPLUS
 DOCUMENT NUMBER: 121:10190
 TITLE: Preparation of (meth)
 acrylic acid esters
 INVENTOR(S): Tani, Juichiro; Okuda, Ryuji; Takahashi, Katsuji; Ri,
 Shotaku
 PATENT ASSIGNEE(S): Dainippon Ink & Chemicals, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 06009496	A2	19940118	JP 1993-55627	19930316
PRIORITY APPLN. INFO.:			JP 1992-111415	19920430

AB The title compds. are easily prepared by reacting (meth) acrylic acid with alcs. in the presence of water-soluble esterification catalysts and water-soluble polymerization inhibitors, then washing the products with water to remove the catalysts and inhibitors. The uses of these catalysts and polymerization inhibitors simplifies the workup process. Thus, heating trimethylolpropane 201, acrylic acid 422, Na hydroquinonesulfonate 3.1, and p-toluenesulfonic acid 12.5 g in 13 g PhMe and 112 g cyclohexane at 100° for 6 h and working up gave a corresponding ester at 95.8% yield.

L16 ANSWER 33 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 31
 ACCESSION NUMBER: 1994:165213 CAPLUS
 DOCUMENT NUMBER: 120:165213
 TITLE: Preparation of acrylic ester or methacrylic ester
 INVENTOR(S): Haga, Masami
 PATENT ASSIGNEE(S): Idemitsu Petrochemical Co, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 05320095	A2	19931203	JP 1992-128363	19920521
PRIORITY APPLN. INFO.:			JP 1992-128363	19920521

AB The title esters without discoloration are prepared by treating (meth) acrylic acid with alcs. in the presence of acid catalysts and aromatic compds. having ≥1 alkyl and ≥2 OH (per 1 benzene ring) as polymerization inhibitors. Thus, 1.20 mol acrylic acid was esterified with 1.00 mol 2-ethylhexyl alc. (I) in cyclohexane in the presence of 50 mg 2-tert-butylhydroquinone and 0.50 g concentrated H₂SO₄ while bubbling with N₂ having O₂ content 6 volume% at 84-98° for 6 h to give an ester with ASTM hue L value 0.5 without polymer generation at 98.9 mol% I conversion.

L16 ANSWER 34 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 32
 ACCESSION NUMBER: 1993:473881 CAPLUS
 DOCUMENT NUMBER: 119:73881
 TITLE: Curable (meth)acrylate compositions with low viscosity
 and manufacture thereof
 INVENTOR(S): Yagi, Hiromumi; Sugimura, Toshiro
 PATENT ASSIGNEE(S): Nippon Shokubai Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 04353503	A2	19921208	JP 1991-129715	19910531
JP 3107851	B2	20001113		
JP 2000103815	A2	20000411	JP 1999-205291	19910531

PRIORITY APPLN. INFO.: JP 1991-129715 A3 19910531
 AB The title composition usable with high filler content and in photocurable epoxy
 resist inks contain inorg. materials and (meth)acrylates **prepared**
 from (meth)acrylic acid and/or
 (meth)acrylates and **alcs.** in the presence of a Cu compound A
 composition from 80 g trimethylolpropane triacrylate **prepared** from
 trimethylolpropane and acrylic acid in the presence of p-toluenesulfonic
 acid and Cu₂O and 20 g talc had viscosity (25°) 900 cP, compared
 with 1700 cP for a control using hydroquinone polymerization **inhibitor**
 in place of Cu₂O.

L16 ANSWER 35 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 33
 ACCESSION NUMBER: 1994:580428 CAPLUS
 DOCUMENT NUMBER: 121:180428
 TITLE: **Process for preparing**
 INVENTOR(S): Chvatal, Zdenek; Dedek, Vaclav; Mazac, Jiri; Marousek,
 Vladimir; Bednar, Bohumil
 PATENT ASSIGNEE(S): Vysoka Skola Chemicko-Technologicka, Czech.
 SOURCE: Czech., 4 pp.
 CODEN: CZXXA9
 DOCUMENT TYPE: Patent
 LANGUAGE: Czech
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 276012	B6	19920318	CS 1989-2377	19890417

PRIORITY APPLN. INFO.: CS 1989-2377 19890417
 OTHER SOURCE(S): MARPAT 121:180428
 AB CH₂:CRCO₂(CH₂)_nX (I; R = H, Me; X = BrCF₂CF₂, ClCF₂CF₂, BrCF₂CFCl, ClCF₂CFCl, 1-chlorotrifluoroethyl, BrCF₂CFCF₃, F₃CCFBrCF₂, F₃CCBrCF₃; n = 1-4) were **prepared** by acid-catalyzed **esterification** of
 the appropriate **alc.** with (meth)acrylic
 acid in the presence of polymerization **inhibitor** or by
esterification of the acid chloride in an alkaline medium in the
 presence of a phase-transfer catalyst. For example, 6 g CH₂:CMeCOCl was
 added dropwise at 0° to a stirred mixture of 10 g BrCF₂CF₂CH₂CH₂OH, 3
 g KOH, 0.32 g Bu₄NBr, 50 mL CH₂Cl₂, and 50 mL H₂O and the whole stirred
 for 2.5 h to give 8.5 g of 97%-pure (GLC) I (R = Me, X = BrCF₂CF₂, n = 2).

L16 ANSWER 36 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 34

ACCESSION NUMBER: 1991:409589 CAPLUS
 DOCUMENT NUMBER: 115:9589
 TITLE: Manufacture of (meth)acrylate esters
 INVENTOR(S): Haga, Masami
 PATENT ASSIGNEE(S): Idemitsu Petrochemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03034956	A2	19910214	JP 1989-166565	19890630
JP 07064791	B4	19950712		

PRIORITY APPLN. INFO.: JP 1989-166565 19890630
 AB In preparation of (meth)acrylate esters by reaction of (meth)acrylic acid with alcs. in solvents in the presence of acid catalysts, byproduct formation is reduced by (A) using (meth)acrylic acids containing polymerization inhibitors, (B) carrying out the reaction under inert gas containing 0.1-10 volume% O, and optionally (C) treating the reaction mixts. with aqueous alkali at 40-95° and washing the separated oily phase with H2O at 40-95°. Thus, stirring a mixture of 186.3 g n-dodecyl alc., 90.4 g methacrylic acid, 0.5 g concentrate H2SO4, 50 mg methoxyhydroquinone, and 80 mL PhMe under N containing 6.0 volume% O at 125-151°, mixing the reaction mixture with aqueous NaOH at 60° for 5 min, separating the oily phase, washing with H2O at 60° for 5 min, and distillation of the residue gave 98.7 mol% n-dodecyl methacrylate of 98.9% purity.

L16 ANSWER 37 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 35

ACCESSION NUMBER: 1991:7402 CAPLUS
 DOCUMENT NUMBER: 114:7402
 TITLE: Manufacture of (meth)acrylate esters of polyhydric alcohols having reduced color
 INVENTOR(S): Ritter, Wolfgang; Sitz, Hans Dieter; Speitkamp, Ludwig
 PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany
 SOURCE: Ger. Offen., 6 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3843938	A1	19900628	DE 1988-3843938	19881224
EP 376091	A1	19900704	EP 1989-123220	19891215
R: GR				
WO 9007487	A1	19900712	WO 1989-EP1550	19891215
W: JP, US				
RW: AT, BE, CH, DE, ES, FR, GB, IT, LU, NL, SE				
EP 449912	A1	19911009	EP 1990-900819	19891215
EP 449912	B1	19940302		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
JP 04502468	T2	19920507	JP 1990-501716	19891215
CA 2006434	AA	19900624	CA 1989-2006434	19891221

US 5198574	A	19930330	US 1991-720445	19910624
PRIORITY APPLN. INFO.:			DE 1988-3843938	19881224
			WO 1989-EP1550	19891215

AB The title monomers are **prepared** by the **esterification** of polyhydric **alcs.** with **(meth)acrylic acids** in the presence of nonsubstituted phenol polymerization **inhibitors, transesterification** catalysts, and activated charcoal color reducing agent. Thus, acrylic acid 928.8, propoxylated neopentyl glycol (OH value 416 mg KOH/g) 1560.4, p-toluene sulfonic acid 87.1, activated charcoal 124.5 and hydroquinone (1100 ppm based on product mixture) 2.5 g were mixed together under a air/N mixture (5 volume% O; 20 L/h) at 135-143° for 5 h, then the activated carbon was removed by filtration, producing a crude product having acid value 34 mg KOH/g, OH value 10 mg KOH/g, Gardner color value <1, viscosity 92 mPa-s, which was mixed with 4 L of aqueous 16% NaCl and 4% NaHO3 solution in the presence of 200 ppm hydroquinone monomethyl ether and dried at 80°/40 mBar for 3 h, and filtered, producing a product having acid value <1 mg KOH/g, OH value <15 mg KOH/g and Gardner color value 3, vs. <1, <15, and 8-9 for a control product **prepared** without the addition of activated charcoal.

L16 ANSWER 38 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 36

ACCESSION NUMBER: 1991:7401 CAPLUS
 DOCUMENT NUMBER: 114:7401
 TITLE: Solventless manufacture of (meth)acrylate esters of polyhydric alcohols
 INVENTOR(S): Ritter, Wolfgang; Sitz, Hans Dieter; Speitkamp, Ludwig
 PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany
 SOURCE: Ger. Offen., 8 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3843930	A1	19900628	DE 1988-3843930	19881224
EP 376090	A1	19900704	EP 1989-123219	19891215
R: GR				
WO 9007485	A1	19900712	WO 1989-EP1548	19891215
W: JP, US				
RW: AT, BE, CH, DE, ES, FR, GB, IT, LU, NL, SE				
EP 449913	A1	19911009	EP 1990-900821	19891215
EP 449913	B1	19940309		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
JP 04502466	T2	19920507	JP 1990-501714	19891215
JP 3036832	B2	20000424		
ES 2050427	T3	19940516	ES 1990-900821	19891215
CA 2006431	AA	19900624	CA 1989-2006431	19891221
US 5648518	A	19970715	US 1991-679075	19910823
PRIORITY APPLN. INFO.:			DE 1988-3843930	A 19881224
			WO 1989-EP1548	W 19891215

AB The title monomers, are **prepared** by the **esterification** of **(meth)acrylic acid** in the presence of acidic **esterification** catalysts and in the presence of α -tocopherol as a polymerization **inhibitor**. Reaction water is removed from the reaction mixture under elevated temps., producing a reaction mixture without a solvent which would otherwise need to be removed or could form an azeotropic-forming agent. Thus, acrylic acid 324.0, ethoxylated trimethylolpropane (OH value 680 mg KOH/g) 368.2,

p-toluenesulfonic acid 24.2, and D,L- α -tocopherol 1.38 g were heated together at 145° while an air/N mixture (5 volume% O, 40 L/h) was passed through the reaction mixture, the crude product was washed with 700 mL 10% aqueous Na₂CO₃ solution and dried in vacuum at 80°/40 mbar for 3 h, producing ethoxylated trimethylolpropane acrylates having acid value <1 mg KOH/g, OH value 43 mg KOH/g, Gardner color value 3-4, and H₂O content 0.31%.

L16 ANSWER 39 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 37
 ACCESSION NUMBER: 1990:632240 CAPLUS
 DOCUMENT NUMBER: 113:232240
 TITLE: **Process for the manufacture of (meth)acrylate esters of polyhydric alcohols**
 INVENTOR(S): Ritter, Wolfgang; Sitz, Hans Dieter; Speitkamp, Ludwig
 PATENT ASSIGNEE(S): Henkel K.-G.a.A., Germany
 SOURCE: Ger. Offen., 5 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3843854	A1	19900628	DE 1988-3843854	19881224
EP 376088	A1	19900704	EP 1989-123217	19891215
R: GR				
WO 9007486	A1	19900712	WO 1989-EP1549	19891215
W: JP, US				
RW: AT, BE, CH, DE, ES, FR, GB, IT, LU, NL, SE				
EP 449918	A1	19911009	EP 1990-900856	19891215
EP 449918	B1	19941005		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
JP 04502467	T2	19920507	JP 1990-501715	19891215
ES 2061009	T3	19941201	ES 1990-900856	19891215
JP 2935742	B2	19990816	JP 1989-501715	19891215
CA 2006433	AA	19900624	CA 1989-2006433	19891221
US 5350877	A	19940927	US 1991-720443	19910624
PRIORITY APPLN. INFO.:			DE 1988-3843854 A	19881224
			WO 1989-EP1549 W	19891215

AB The title compds. are prepared by the reaction of (meth)acrylic acid in the presence of transesterification catalysts and substituted phenolic polymerization inhibitors with polyhydric alcs. so as to produce a reaction mixture which is substantially free of solvents and/or azeotropic carriers, and the produced reaction water is removed from the reaction mixture in the gas phase. Thus, acrylic acid 1559.5, ethoxylated trimethylolpropane (I, OH value 680) 1521.0, p-toluenesulfonic acid 107.8, and 2,5-di-tert-butylhydroquinone 4.96 g were contacted with 40 L/h of air to remove water, esterified for 6 h, heated at 105°/400 mbar for 6 h, neutralized with 103 g Ca(OH)₂, stirred at 80°/50 mbar, and filtered to produce I acrylate having acid value <1, OH value 24, and Gardner color >1.

L16 ANSWER 40 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 38
 ACCESSION NUMBER: 1991:24763 CAPLUS
 DOCUMENT NUMBER: 114:24763
 TITLE: **Process for the manufacture of (meth)acrylate esters of polyhydric alcohols**
 INVENTOR(S): Ritter, Wolfgang; Sitz, Hans Dieter; Speitkamp, Ludwig

PATENT ASSIGNEE(S) : Henkel K.-G.a.A., Germany
 SOURCE: Ger. Offen., 9 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent
 LANGUAGE: German

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3843843	A1	19900705	DE 1988-3843843	19881224
EP 376089	A1	19900704	EP 1989-123218	19891215
R: GR				
EP 377156	A1	19900711	EP 1989-123221	19891215
R: GR				
WO 9007483	A1	19900712	WO 1989-EP1546	19891215
W: JP, US				
RW: AT, BE, CH, DE, ES, FR, GB, IT, LU, NL, SE				
WO 9007484	A1	19900712	WO 1989-EP1547	19891215
W: JP, US				
RW: AT, BE, CH, DE, ES, FR, GB, IT, LU, NL, SE				
EP 449865	A1	19911009	EP 1990-900162	19891215
EP 449865	B1	19940928		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
EP 449919	A1	19911009	EP 1990-900865	19891215
EP 449919	B1	19940504		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL				
JP 04502455	T2	19920507	JP 1990-500801	19891215
JP 04502459	T2	19920507	JP 1990-501465	19891215
ES 2053171	T3	19940716	ES 1990-900865	19891215
JP 2758717	B2	19980528	JP 1989-501465	19891215
JP 2863309	B2	19990303	JP 1989-500801	19891215
CA 2006430	AA	19900624	CA 1989-2006430	19891221
CA 2006432	AA	19900624	CA 1989-2006432	19891221
AU 618875	B2	19920109	AU 1990-49716	19900212
AU 9049716	A1	19910829		
AU 623222	B2	19920507	AU 1990-49718	19900212
AU 9049718	A1	19910905		
AU 623493	B2	19920514	AU 1990-49722	19900212
AU 9049722	A1	19910829		
AU 626986	B2	19920813	AU 1990-49721	19900212
AU 9049721	A1	19910829		
US 5159106	A	19921027	US 1991-679073	19910820
US 5210281	A	19930511	US 1991-720444	19910823
PRIORITY APPLN. INFO.:			DE 1988-3843843	19881224
			DE 1989-3939163	19891127
			WO 1989-EP1546	19891215
			WO 1989-EP1547	19891215

AB In the title process, (meth)acrylic acids are esterified with polyhydric alcs. in the presence of acidic esterification catalysts and liquid droplets of polymerization inhibitor. The crude product may then be neutralized with oxides and/or hydroxides of alkaline earth metals and/or Al, and treated with decoloring agents. Thus, acrylic acid 14.53, ethoxylated trimethylolpropane (OH value 665 mm-KOH/g) 14.18, p-toluenesulfonic acid 1.01, and 2,5-di-tert-butylhydroquinone 0.047 kg were contacted with 100 L/h of air, the product stream heated to 105° and contacted with an air stream (60 L/h), water removed under the following vacuum profile: 2 h at 105°/400 mbar, 1 h at 105°/300 mbar, 0.5 h at 105°/200 mbar, 1 h at 105°/100 mbar, and 0.5 h at

105°/23 mbar. The intermediate was mixed with 0.53 kg Ca(OH)2, stirred at 80°/50 mbars, and filtered, producing polyethylene glycol trimethylolpropane ether acrylate having acid value <1 mg-KOH/g, OH value 14 mg-KOH/g, and Gardner color value <1.

L16 ANSWER 41 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 39

ACCESSION NUMBER: 1990:119592 CAPLUS
 DOCUMENT NUMBER: 112:119592
 TITLE: Manufacture of polyfunctional (meth)acrylate esters with little discoloration
 INVENTOR(S): Honma, Akihiro
 PATENT ASSIGNEE(S): Mitsubishi Gas Chemical Co., Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01258643	A2	19891016	JP 1988-83104	19880406
JP 2586092	B2	19970226		

PRIORITY APPLN. INFO.: JP 1988-83104 19880406
 AB Light-colored transparent title esters are manufactured by esterifying (meth)acrylic acid with polyhydric alcs. in the presence of an acid catalyst and pyrogallol in contact with O2-containing gas, then removing the catalyst by extraction with H2O, neutralizing excess (meth)acrylic acid with an aqueous alkaline solution, and washing. Thus, a mixture of methacrylic acid 313, trimethylolpropane 148, p-MeC6H4SO3H 34, pyrogallol 0.6, and cyclohexane 130 g was refluxed while bubbling air through the solution, and distilling off 61.5 g H2O. Then 242 g cyclohexane and 100 g H2O were added, the aqueous layer containing p-MeC6H4SO3H was separated, the organic layer was neutralized by contacting with 372 g 15% aqueous NaOH, then washing with H2O, adding 0.01 g toluhydroquinone, and distilling in vacuo to give 350 g trimethylolpropane trimethacrylate with APHA color 20, vs. 60 using hydroquinone instead of pyrogallol.

L16 ANSWER 42 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 40

ACCESSION NUMBER: 1989:407990 CAPLUS
 DOCUMENT NUMBER: 111:7990
 TITLE: Manufacture of esters of unsaturated acids with cation exchangers as catalysts
 INVENTOR(S): Nakajima, Sumio; Sogabe, Hideki; Yoshida, Hiroshi; Okubo, Atsushi
 PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01009956	A2	19890113	JP 1987-162251	19870701

PRIORITY APPLN. INFO.: JP 1987-162251 19870701
 AB Esters are prepared in high yield with min. byproduct formation by esterification of (meth)acrylic acid with C4-12 aliphatic alcs. in the presence of strongly acid cation exchange resins as catalysts with stirring at 0.005-2 kW/m³ in boiling alc. solution containing water, the water being removed with alc. and the unreacted acids being recovered in the organic phase. A mixture of acrylic acid (I) 49, 2-ethylhexanol (II) 36.6, 2-ethylhexyl acrylate 14.2, and water 0.1% was added to a reactor containing 14 L ion exchange resin (Diaion PK-208) to total volume 50 L, and the composition was stirred at 85°/70 mm with continuous addition of the mixture at 23.5 kg/h and II at 13.2 kg/h, addition of polymerization inhibitor, and removal of 1.69 kg/h aqueous phase containing 0.002% I and 0.08% II and 0.18 kg/h organic phase containing I 0.003, isoctane 3.7, and H₂O 2.5%, the conversions of I and II being 59.5% and 56.8%, resp., and the selectivities for I and II being 99.2% and 99.12%, resp.

L16 ANSWER 43 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 41
 ACCESSION NUMBER: 1989:407985 CAPLUS
 DOCUMENT NUMBER: 111:7985
 TITLE: Preparation of (dialkylamino)alkyl (meth)acrylates
 INVENTOR(S): Hurtel, Patrice; Hazan, Charles; De Champs, Francois; Paul, Jean Michel
 PATENT ASSIGNEE(S): Norsolor S. A., Fr.
 SOURCE: Eur. Pat. Appl., 4 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 298867	A2	19890111	EP 1988-401771	19880707
EP 298867	A3	19890308		
EP 298867	B1	19920923		
R: AT, BE, CH, DE, ES, GB, GR, IT, LI, LU, NL, SE				
FR 2617840	A1	19890113	FR 1987-9697	19870708
FR 2617840	B1	19890901		
CA 1303056	A1	19920609	CA 1988-571353	19880707
AT 80868	E	19921015	AT 1988-401771	19880707
ES 2034317	T3	19930401	ES 1988-401771	19880707
JP 01038047	A2	19890208	JP 1988-170723	19880708
US 4851568	A	19890725	US 1988-216593	19880708
PRIORITY APPLN. INFO.:			FR 1987-9697	19870708
			EP 1988-401771	19880707

OTHER SOURCE(S): CASREACT 111:7985; MARPAT 111:7985
 AB The esters CH₂:C(R₁)CO₂ZNR₂R₃ (R₁ =H, Me; R₂, R₃ =alkyl, aryl, or form a ring; Z =C1-5 alkylene) are prepared by heating Et (meth)acrylate with R₃R₂NZOH in the presence of Ti(OEt)₄ and polymerization inhibitors. Thus, heating 660 parts Et acrylate, 267 parts Me₂NCH₂CH₂OH, 1000 ppm phenothiazine, and 0.5 mol% (based on amino alc.) Ti(OEt)₄ at 90-95° and 0.53 bar with distillation of acrylate-EtOH azeotrope gave 422 parts 2-(dimethylamino)ethyl acrylate.

L16 ANSWER 44 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 42
 ACCESSION NUMBER: 1989:515916 CAPLUS
 DOCUMENT NUMBER: 111:115916

TITLE: **Preparation of (meth)
acrylic acid esters by
transesterification**
 INVENTOR(S): Beranek, Jan; Gutwirth, Karel; Machova, Marta; Benes,
Radek; Kantor, Milan
 PATENT ASSIGNEE(S): Czech.
 SOURCE: Czech., 5 pp.
 CODEN: CZXXA9
 DOCUMENT TYPE: Patent
 LANGUAGE: Czech
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 259632	B1	19881014	CS 1987-1241	19870225
			CS 1987-1241	19870225

PRIORITY APPLN. INFO.: OTHER SOURCE(S): CASREACT 111:115916

AB The **transesterification** of CH₂:CRCO₂R₁ (R = H, Me, R₁ = Me, Et) with higher aliphatic or cycloaliph. alcs. and glycols is catalyzed by Mg(OMe)₂, which is easy to remove as MgCO₃. Thus, a mixture of Alfol 1620 (cetyl and stearyl alc.) 434, CH₂:CMeCO₂Me (I) 194, cyclohexane 333, and phenyl- β -naphthylamine (polymerization inhibitor) 1 g was azeotropically dehydrated; a suspension of 0.7 g Mg in 14 g MeOH was added at 70°; and the mixture was refluxed 4 h with separation of MeOH. The residual solution was diluted with 4 g water and treated 15 min with 172 mL/min CO₂, which was heated to 95° in a hot washing bottle. Residual CO₂ was flushed with air, precipitated MgCO₃ was filtered with kiselguhr, and solvents and I were steam-stripped to give 98% cetyl-stearyl methacrylate containing <2% alcoholates and <0.5% I. The filter cake containing 70% MgCO₃ was utilized as a fertilizer component.

L16 ANSWER 45 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 43

ACCESSION NUMBER: 1988:205252 CAPLUS
 DOCUMENT NUMBER: 108:205252
 TITLE: **Process for producing unsaturated
carboxylates**
 INVENTOR(S): Nakashima, Sumio; Sogabe, Hideki; Yoshida, Hiroshi;
Okubo, Atsushi
 PATENT ASSIGNEE(S): Nippon Shokubai Kagaku Kogyo Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 25 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8800180	A1	19880114	WO 1987-JP482	19870707
W: BR, HU, KR, US				
RW: DE, FR, GB, IT				
JP 63017844	A2	19880125	JP 1986-159674	19860709
EP 273060	A1	19880706	EP 1987-904331	19870707
EP 273060	B1	19911016		
R: DE, FR, GB, IT				
BR 8707412	A	19881101	BR 1987-7412	19870707
HU 48863	A2	19890728	HU 1987-3812	19870707
HU 204024	B	19911128		
CA 1290767	A1	19911015	CA 1987-541491	19870707

CN 87105726	A	19880706	CN 1987-105726	19870709
CN 1024190	B	19940413		
CS 272223	B2	19910115	CS 1987-5239	19870709
US 4833267	A	19890523	US 1988-193523	19880309
PRIORITY APPLN. INFO.:			JP 1986-159674	19860709
			WO 1987-JP482	19870707

OTHER SOURCE(S): CASREACT 108:205252

AB In **esterification** of **(meth)acrylic**

acid with C1-12 aliphatic **alcs.**, a strongly acidic ion exchange resin catalyst is dispersed in the reaction mixture by a mixer having a stirring power of 0.005-2 kW/m³ reaction solution. Thus, 36.7 kg/h mixture solution containing acrylic acid 31.4, 2-ethylhexanol 59.4,

2-ethylhexyl

acrylate (I) 9.1, and H₂O 0.1% was fed to a reactor containing 14 L Diaion Pk 208 and 0.05% polymerization **inhibitor**, and the reaction mixture was stirred (0.05 kW/m³) at 85°/70 mmHg to give a bottom discharge containing 59.99% I with 58.9% conversion (based on acrylic acid) and 99.19% selectivity.

L16 ANSWER 46 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 44

ACCESSION NUMBER: 1988:427631 CAPLUS

DOCUMENT NUMBER: 109:27631

TITLE: (Meth)acrylate dental material

INVENTOR(S): Schmitt, Werner; Jochum, Peter; Zahler, Wolf Dietrich; Huebner, Heijo; Holupirek, Manfred; Gasser, Oswald; Herzog, Christian

PATENT ASSIGNEE(S): ESPE Fabrik Pharmazeutischer Praeparate G.m.b.H., Fed. Rep. Ger.

SOURCE: Ger. Offen., 5 pp.
CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3607331	A1	19870910	DE 1986-3607331	19860306
US 4795823	A	19890103	US 1987-20902	19870302
JP 62230750	A2	19871009	JP 1987-49874	19870303
JP 07068172	B4	19950726		
EP 235826	A1	19870909	EP 1987-103200	19870306
EP 235826	B1	19900425		
R: AT, BE, CH, DE, FR, GB, LI, LU, NL, SE				
AT 52245	E	19900515	AT 1987-103200	19870306
PRIORITY APPLN. INFO.:			DE 1986-3607331	19860306
			EP 1987-103200	19870306

AB The **(meth)acrylic acid esters**

(MO)_n(AO₂CCH₂OCH₂CH₂CO₂)_xA(OM)_n [A = **alc.** radical with C \geq 4 between the linkage sites; M = CH₂:CR₁CO; R₁ = H, Me; n = 1, 2; x = 0.3-3] are **prepared** as dental material.

Bis(hydroxymethyl)tricyclo[5.2.1.0_{2,6}]decane (T-diol) (196 g) in 400 mL cyclohexane was partially **esterified** with 89 g triglycolic acid in the presence of 7 g 4-MeC₆H₄SO₃H with the removal of 18 g H₂O. The free OH groups were **esterified** with 129 g CH₂:CMeCO₂H in the presence of polymerization **inhibitors** to give an ester mixture consisting of 32% T-diol dimethacrylate, 38% triglycolic acid bis[T-methacrylate] and 30% HO(TOCOCH₂OCH₂CH₂OCH₂CO₂)₂-3TOH bis(methacrylate). A solution was **prepared** of 50 parts by weight bis(acryloyloxyethyl)tricyclo[5.2.1.0_{2,6}]decane and 50 parts of the ester mixture and 0.15% camphorquinone and 1.5%

N,N-dimethylaminoethyl methacrylate added. Sep., a powder was prepared containing 112 parts silanized SiO₂ granulate, 72 parts silanized pyrogenic SiO₂ and 3 g CaF₂. A dental composition was prepd. by mixing 113 g of the powder with 80 mL of the solution. Polymerization was carried out by light exposure as usual.

L16 ANSWER 47 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 45

ACCESSION NUMBER: 1987:157005 CAPLUS
 DOCUMENT NUMBER: 106:157005
 TITLE: (Meth)acrylate esters
 INVENTOR(S): Fujii, Masahiko; Hashino, Shizuo
 PATENT ASSIGNEE(S): Nippon Oil Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61243046	A2	19861029	JP 1985-82267	19850419
PRIORITY APPLN. INFO.:			JP 1985-82267	19850419
OTHER SOURCE(S):	CASREACT 106:157005			
AB	(Meth)acrylate esters, useful as monomers for resins, coating materials, and adhesives, are prepared by esterification of alcs. with excess (meth)acrylic acid in the presence of acid catalysts and polymerization inhibitors. The reaction mixture is neutralized with aqueous alkali solns., inorg. acids are added to pH ≤ 4, and the unesterified acid is extracted with aliphatic or petroleum ethers from the aqueous layer. CH ₂ :CMeCO ₂ H was treated with Me(CH ₂) ₁₇ OH in the presence of 4-MeC ₆ H ₄ SO ₃ H and hydroquinone at 110-115°/200-300 torr for 4.5 h, then the solution was neutralized with 17.5% aqueous NaOH, and separated from the oil layer to give 95.8% CH ₂ :CMeCO ₂ (CH ₂) ₁₇ Me. The aqueous layer was extracted with Et ₂ O to recover the unesterified starting acid in 99.5% purity and reduce the COD of the effluent by 79.5%.			

L16 ANSWER 48 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 46

ACCESSION NUMBER: 1987:67824 CAPLUS
 DOCUMENT NUMBER: 106:67824
 TITLE: (Meth)acrylate esters
 INVENTOR(S): Hashino, Shizuo; Tanabe, Tatsuhei
 PATENT ASSIGNEE(S): Nippon Oils & Fats Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61176555	A2	19860808	JP 1985-14447	19850130
JP 06080033	B4	19941012		
PRIORITY APPLN. INFO.:			JP 1985-14447	19850130
AB	(Meth)acrylate esters are prepared by esterifying higher alcs. with excess (meth)acrylic acid in presence of both an esterifying catalyst and a polymerization inhibitor, followed by esterifying residual (

(meth)acrylic acid with lower alcs., and fractionating the mixed (meth)acrylate esters. This method gives higher alc. esters in high yield and purity with efficient recovery of the excess acid. Thus, heating H₂C:CM₂CO₂H (I) 103.3, octadecyl alc. 270.0, 4-MeC₆H₄SO₃H 3.5, and hydroquinone 0.11 g at 110-115°/200-600 torr for 4.5 h gave a 99.2% conversion of the alc. and 13.6 g residual I. Heating the mixture with 30.3 g MeOH at 80° for 3 h and distilling the final mixture at 46°/160 torr gave a distillate containing 15.1 g Me methacrylate corresponding to a 95.2% recovery of residual I, and a residue containing 324.6 g octadecyl methacrylate corresponding to a 96.0% recovery of the alc.

L16 ANSWER 49 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 47

ACCESSION NUMBER: 1987:120368 CAPLUS
 DOCUMENT NUMBER: 106:120368
 TITLE: Alkyl methacrylate preparation
 INVENTOR(S): Dietrich, Gerhard; Nestler, Gerhard; Ruckh, Peter;
 Herzog, Reinhard
 PATENT ASSIGNEE(S): BASF A.-G., Fed. Rep. Ger.
 SOURCE: Ger. Offen., 8 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 3518482	A1	19861127	DE 1985-3518482	19850523
US 4675436	A	19870623	US 1986-857052	19860429
JP 61271247	A2	19861201	JP 1986-108733	19860514
JP 06017337	B4	19940309		
EP 202610	A2	19861126	EP 1986-106633	19860515
EP 202610	A3	19870128		
EP 202610	B1	19880928		

R: BE, DE, FR, GB, IT, NL

PRIORITY APPN. INFO.: DE 1985-3518482 19850523

OTHER SOURCE(S): CASREACT 106:120368

AB Alkyl (meth)acrylates are prepared from (meth) acrylic acid and C₆-20 alcs. in the presence of 0.1-5% strong acids, polymerization inhibitors, and an O-containing gas (1-20 vol%) at 80-150°, for the elimination of H₂O. The (meth)acrylic acid-alc. ratio is 1:0.8-1.2. To a 1st reactor was fed methacrylic acid 190, H₂SO₄ 5, phenothiazine 0.3, and n-octanol 280 parts/h. To a 2nd reactor was fed the mixture from the 1st reactor with 36 parts/h n-octanol, and 150,000 volume parts air. At 120°, 40 parts/h H₂O was eliminated. The product (470 parts/h) contained n-octyl methacrylate 90.5, methacrylic acid 0.7, octanol 5.8, and high-boiling side products (traces of dioctyl ether and olefins) 0.5%.

L16 ANSWER 50 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 48

ACCESSION NUMBER: 1984:121755 CAPLUS
 DOCUMENT NUMBER: 100:121755
 TITLE: Acrylate or methacrylate esters
 PATENT ASSIGNEE(S): Yokkaichi Chemical Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

10/657,157

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 58174346	A2	19831013	JP 1982-57285	19820408
JP 01042255	B4	19890911		

PRIORITY APPLN. INFO.: JP 1982-57285 19820408
AB Acrylic acid (I) [79-10-7] or methacrylic acid [79-41-4] is esterified with alcs. in the presence of esterification catalysts, antioxidants, and Cu or Cu salts (polymerization inhibitors), and the products are treated with pyrophosphoric acid (II), II salts, 1-hydroxyethylidenebis(phosphonic acid) (III) [2809-21-4], or III salts to remove Cu ions. Thus, a mixture of 1.10 equiv I, 1.0 equiv 1,1'-isopropylidenebis[4-(2-(2-hydroxethoxy)ethoxy]benzene] [27697-57-0], 3.4% (based on I) 4-MeC₆H₄SO₃H, 100 ppm (on I) powdered Cu, 100° (on I) PhMe, and 0.4% NaH₂PO₂ was heated to reflux, removing H₂O until the acid number reached a constant value and the product cooled, neutralized with dilute NaOH, treated with 0.55% (on I) III, separated from the aqueous phase, and stripped of solvents in vacuo at 50-60° to give an ester [56361-55-8] having APHA color number 30 and containing only a trace of Cu ion.

L16 ANSWER 51 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 49

ACCESSION NUMBER: 1981:192923 CAPLUS
DOCUMENT NUMBER: 94:192923
TITLE: Monomers for polymeric depressing additives for high-paraffin oils
INVENTOR(S): Minkov, V. A.; Sopina, V. E.; Zakordonets, O. P.; Sergeev, V. P.; Gaevoi, G. M.; Khmelnitskii, A. G.; Lubenets, E. G.; Saveleva, N. I.; Skovorodnikov, Yu. A.
PATENT ASSIGNEE(S): USSR
SOURCE: U.S.S.R. From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1981, (9), 88.
CODEN: URXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Russian
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
SU 810668	A1	19810307	SU 1978-2694189	19781206
			SU 1978-2694189	19781206

PRIORITY APPLN. INFO.: SU 1978-2694189 19781206
AB Monomers for pour-point-depressant polymers were prepared by simultaneous esterification of acrylic and methacrylic acid, in a 2-5:1 mol. ratio, with a C₁₈-26 alc. fraction in toluene. The reaction was carried out at 100-20° using toluenesulfonic acid [104-15-4] as catalyst and hydroquinone [123-31-9] as polymerization inhibitor.

L16 ANSWER 52 OF 52 CAPLUS COPYRIGHT 2004 ACS on STN DUPLICATE 50

ACCESSION NUMBER: 1981:47993 CAPLUS
DOCUMENT NUMBER: 94:47993
TITLE: (Meth)acrylic acid esters
INVENTOR(S): Schuster, Karl Ernst; Rosenkranz, Hans Juergen; Griebsel, Bernd

PATENT ASSIGNEE(S) : Bayer A.-G., Fed. Rep. Ger.
 SOURCE: Ger. Offen., 19 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2913218	A1	19801023	DE 1979-2913218	19790403

PRIORITY APPLN. INFO.: DE 1979-2913218 19790403
 AB (Meth)acrylates of saturated aliphatic **alcs.** containing 2-4 OH groups, their ethoxylation products, or unsubstituted or C1-3 alkyl mono- or disubstituted 5-(hydroxymethyl)-1,3-dioxanes are **prepared** by **esterification** in the presence of 0.001-5% organic phosphite catalyst and 0.01-0.3% mono- or diphenol as polymerization **inhibitor**. Thus, acrylic acid [79-10-7] 3.5, ethoxylated trimethylolpropane [50586-59-9] 5.36, cyclohexane 2.7, and H₂SO₄ 0.073 kg were mixed with 0.006 kg (EtO)₃P [122-52-1] and 2,5-di-tert-butylhydroquinone (I) [88-58-4] and **esterified** 17 h at 82°, while 10 L/h (EtO)₃P-saturated air and 10 L/h I-saturated air were passed through the mixture, so that the acid number of the reaction mixture was 12. The mixture was cooled, mixed with (EtO)₃P 0.005, I 0.0024, and toluhydroquinone [95-71-6] 0.002 kg, distilled free of cyclohexane, and distilled for 4 h at 50 mbar/105° while 50 L/h (EtO)₃P-saturated air was passed through the mixture. The final product [28961-43-5] had acid number 2.5, iodine color number 0-1, and viscosity 120 mPa-s. A control **prepared** without (EtO)₃P had iodine color number 2-3 and viscosity 190 mPa-s.

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COST IN U.S. DOLLARS	SINCE FILE	TOTAL	
	ENTRY	SESSION	
FULL ESTIMATED COST	195.12	195.33	
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL	
	ENTRY	SESSION	
CA SUBSCRIBER PRICE	-38.22	-38.22	

STN INTERNATIONAL LOGOFF AT 13:39:59 ON 28 JUL 2004